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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/629,867 | 07/30/2003 | Rucy-Fa Huang | BHT-3117-148 | 7364 |

7590 06/29/2005

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| EXAMINER |
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DAVIS, ROBERT B

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| ART UNIT | PAPER NUMBER |
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1722

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,867

Applicant(s)

HUANG ET AL.

Examiner

Robert B. Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muranaka et al (JP 57030526 A: figures 1-7) taken together with Bianca et al (5,938,996: figure 8A) and Kandel (2002/0089084 A1: figures 1-6).

Muranaka et al disclose a mold for forming a support member (filter frame 9) on periphery of a folded filter element (8). The mold comprises an upper mold (A) and a lower mold (B) having a plurality of equally spaced separating plates (figure 5) which position the prefolded filter during molding of the filter frame (9). The mold also has an annular groove (G), which forms the filter frame forming cavity and a plurality of gates

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(D) to feed the plastic material into the groove (G). The reference does not disclose alignment holes and posts on the upper and lower mold.

Bianca et al disclose a molding apparatus (54) comprising four alignment posts (63) on the lower mold and a corresponding set of four alignment holes which mate with the posts to align the molds upon closing.

Kandel discloses an injection mold for forming a plastic frame on the edge of a filter media wherein the separating posts have a curved shape and the mold uses alignment pins (178) on the upper mold and corresponding alignment recesses on the lower mold.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the apparatus of Muranaka et al by using four alignment recesses on an upper molding member and four alignment posts protruding from a lower mold as disclosed by Bianca et al for the purpose of aligning the molds upon closing to ensure proper mating of the molds. Kandel is a teaching reference to show that alignment pins and recesses on mating mold parts were well known in the filter frame molding art.

In regards to claim 6, it would have been further obvious to modify the shape of the separating plates of Muranaka et al by using rounded separating plates as disclosed by Kandel for the purpose of forming a pleated filter and frame assembly having the desired shape of the filter folds.

Regarding claim 3, the mold of Muranaka et al is capable of molding rubber.

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4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muranaka et al taken together with Bianca et al and Kandel as applied to claims 1, 3 and 6 above, and further in view of Kadoya (5,043,000: figure 19).

The combination above discloses all claimed features except for the separating plates being triangular.

Kadoya discloses an injection mold for forming a molded frame on a filter element (S) comprising a plurality of triangular separating plates (figure 19) to position the filter in the mold during molding.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the apparatus of Muranaka et al by using triangular separating plates as disclosed by Kadoya for the purpose of positively supporting a zigzag preformed filter element (S) within the mold.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muranaka et al taken together with Bianca et al and Kandel as applied to claims 1, 3 and 6 above, and further in view of Mullins et al (5,556,440: figures 4-12).

The combination above discloses all claimed features except for annular groove having a curved shape to form the frame.

Mullins discloses a mold (figure 12) having a curve shaped surface for forming an improved sealing surface (164) of a filter element.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the apparatus of Muranaka et al by having an annular groove molding

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surface with a curved shape as disclosed by Mullins for the purpose of improving the seal of the filter assembly within a housing.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muranaka et al taken together with Bianca et al and Kandel as applied to claims 1, 3 and 6 above, and further in view of Chapman (6,322,615: figure 1; column 2, lines 41-51; column 3, lines 5-20 and column 4, lines 53-63).

The combination above discloses all claimed features except for the use of filter media of non-woven fabric and metallic gauze.

Chapman discloses a filtering media of air laid polyester fibers and a metallic grill to support the filtering media such that the corrugated media maintains its shape. Air laid fibers are well known as non-woven fabrics formed by melt-blowing.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the apparatus of Muranaka et al by using a combination non-woven filtering media and metallic grill as disclosed by Chapman as the grill allows the filtering media to maintain its shape once corrugated. It would have been further obvious to use metallic gauze as such was a well-known filtering media.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muranaka et al taken together with Bianca et al and Kandel as applied to claims 1, 3 and 6 above, and further in view of Kolb (3,747,581: figures 4-6 and column 4, lines 35-54).

The combination above discloses all claimed features except for the filtering media being stainless steel metallic gauze.

Kolb discloses an air filter (22) formed of metallic gauze of steel wool.

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It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the apparatus of Muranaka et al by using a metallic gauze filtering element as such was a well known air filtering media as disclosed by Kolb. It would have been further obvious to use stainless steel as such was a well-known filtering media.

Conclusion


8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining references illustrate the state of the art of filter manufacturing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert B. Davis whose telephone number is 571-272-1129. The examiner can normally be reached on Monday-Friday 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Robert B. Davis
Primary Examiner
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6/26/05